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IN THE
# Supreme Court of the United States

FEDERAL ENERGY REGULATORY COMMISSION,
*Petitioner*,

AND

ENERNOC, INC., ET AL.,
*Petitioners*,

v.

ELECTRIC POWER SUPPLY ASSOCIATION, ET AL.,
*Respondents*.

**On Writs of Certiorari to the United States Court of Appeals for the District of Columbia Circuit**

## BRIEF OF NRG ENERGY, INC. AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

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## INTEREST OF *AMICUS CURIAE*[1]

*Amicus* NRG Energy, Inc. ("NRG") is one of the Nation's largest providers of wholesale generation, with more than 52,000 megawatts representing 4.5% of the Nation's total generation capacity. NRG's resources include coal-fired and natural gas-fired power plants, a nuclear facility, and utility-scale wind and solar generation facilities. NRG also manages several thousand megawatts of demand response in the organized electricity markets.

NRG sells power into the wholesale power markets from both its traditional generating facilities and, increasingly, "distributed energy resources" – small-

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[1] Pursuant to Supreme Court Rule 37.6, counsel for *amicus* represent that they authored this brief in its entirety and that none of the parties or their counsel, nor any other person or entity other than *amicus* or its counsel, made a monetary contribution intended to fund the preparation or submission of this brief. Pursuant to Rule 37.3(a), counsel for *amicus* represent that all parties have consented to (or not objected to) the filing of this brief. The non-federal petitioners have filed letters granting blanket consent to the filing of *amicus* briefs; respondents American Public Power Association, Edison Electric Institute, Electric Power Supply Association, Lower Mount Bethel Energy, LLC, National Rural Electric Cooperative Association, Old Dominion Electric Cooperative, PJM Interconnection, LLC, PJM Power Providers Group, PPL Brunner Island, LLC, PPL Electric Utilities Corporation, PPL EnergyPlus, LLC, PPL Holtwood, LLC, PPL Maine, LLC, PPL Martins Creek, LLC, PPL Montour, LLC, and PPL Susquehanna, LLC have filed letters granting blanket consent to the filing of *amicus* briefs. Respondents Pennsylvania Public Utility Commission, PSEG Energy Resources & Trade LLC, PSEG Power LLC, and Public Service Electric and Gas Company have stated that they do not object to the filing of NRG's *amicus* brief, and those written notices are being filed contemporaneously with the brief. Written consents from petitioner Federal Energy Regulatory Commission and the remaining respondents also are being filed contemporaneously with the brief.

scale power sources that can be aggregated to provide power necessary to meet consumer demand. In addition, NRG sells electricity at retail to more than 2.8 million customers in States that have restructured their retail regimes to allow customers to choose a competitive energy supplier.

Although demand response competes directly with NRG's legacy generation facilities, a large part of NRG's future is likely to be in distributed energy resources including renewable generation facilities like rooftop solar, energy storage, efficient combined heat and power facilities, electrical vehicle charging services, smart home energy management systems, sophisticated microgrid solutions, and traditional demand response services. NRG utilizes various combinations of these technologies to provide services to retail customers. NRG also utilizes these technologies to supply reliable energy to the wholesale market and to provide critical "ancillary services" that support the stability and security of the electricity supply. These technologies allow consumers to conserve energy, reduce their dependence on the electric grid, and realize substantial cost savings. Demand response, in particular, can significantly reduce the environmental impact of traditional sources of energy by harnessing market incentives and consumer choice, while enhancing overall grid reliability. The benefits of demand response thus extend not just to the individual consumers who decide to sign up for a demand response program, but also to the market as a whole and society at large.

To deploy capital and innovate effectively, companies like NRG make investments on both the supply and demand sides of the energy value chain in wholesale markets that cross state lines. Subjecting

investments directed to wholesale market participation to a balkanized patchwork of state programs would have a chilling effect on capital deployment and frustrate innovation. Moreover, federal jurisdiction over demand response participating in the wholesale market ensures, among other things, that (i) state regulations do not undermine the sound functioning of wholesale markets; (ii) federal regulators can protect participants in the distributed wholesale energy markets from programs that favor incumbent monopoly utilities; and (iii) demand-side resources are properly incorporated into the efficient wholesale procurement of energy. Sound federal regulation of demand response resources will ensure that demand response and generation resources are treated together, on a nondiscriminatory basis within the same regulatory and jurisdictional framework, promoting needed investment and benefiting the public interest.

For these reasons and as explained below, NRG agrees with petitioners that the Federal Energy Regulatory Commission ("FERC") must have the authority to regulate participation of demand response in wholesale markets in order to fulfill its statutory mandate to ensure that wholesale rates are just and reasonable and to eliminate undue discrimination and preferences.

NRG is one of the largest members of respondent Electric Power Supply Association ("EPSA"). NRG disagrees with EPSA that participation of demand response resources in wholesale markets can be separated from other aspects of wholesale markets subject to FERC's regulatory authority. NRG does, however, agree with EPSA's challenge to the level of compensation set in Order 745, which creates an

inefficient incentive to curtail electricity consumption when continued use without the incentive would be economic (*i.e.*, when the value to the customer of consuming electricity would exceed the marginal cost of producing it). NRG therefore agrees with EPSA that FERC's order was arbitrary and capricious, and that respondents should prevail on the second question presented.

## SUMMARY OF ARGUMENT

**I.A.** Electricity markets are unique because electricity generally cannot be stored economically in bulk. As a result, the available supply of electricity must closely match consumption in real time. And because the least costly generation resources are typically deployed first, the wholesale cost of energy can rise sharply during periods of peak demand. Power consumption generally does not respond to increases in the wholesale cost of electricity because retail rates often are fixed or do not vary with changes in the cost of wholesale electricity, even when the wholesale cost increases sharply in excess of retail rates. Demand response programs can provide one remedy in wholesale electricity markets for this disequilibrium in electricity pricing. To operate effectively, these programs must give energy consumers appropriate financial incentives to reduce their electricity usage voluntarily, based on wholesale market price signals.

**B.** The Federal Energy Regulatory Commission ("FERC") reasonably determined that participation of demand response resources in wholesale markets is important to achieving just, reasonable, and non-discriminatory wholesale rates. The Federal Power Act ("FPA") grants FERC jurisdiction over wholesale electricity rates and practices that affect those rates.

*See* 16 U.S.C. §§ 824d(a), 824e(a). FERC's demand response program, which operates within wholesale markets, has a direct effect on wholesale rates. Incidental effects on retail markets do not deprive FERC of jurisdiction. Further, although the FPA reserves to States jurisdiction over retail "sales" of electricity, FERC reasonably determined that refraining from consumption does not constitute a "sale" of electricity. Denying FERC jurisdiction over the participation of demand response resources in wholesale markets would undermine FERC's ability to carry out its core statutory obligation of ensuring just and reasonable wholesale rates.

II. Although FERC correctly determined that wholesale demand response programs are integral to ensuring just and reasonable rates, the court of appeals was correct that FERC's decision to set demand response compensation at the "locational marginal price" ("LMP"), subject to a "net benefits" test, cannot withstand review. FERC's pricing decision creates a de facto subsidy, preferring demand response resources over generation resources. FERC's rate also favors behind-the-meter generation installed by customers over otherwise identical generation resources on the grid. The pricing policy adopted in the order is thus arbitrary and capricious and violates the FPA's prohibition on undue discrimination or preference.

## ARGUMENT

### I. FERC HAS JURISDICTION OVER DEMAND RESPONSE PARTICIPATING IN WHOLESALE MARKETS AS A PRACTICE AFFECTING WHOLESALE RATES

#### A. A Well-Designed Demand Response Program Is Vital to the Efficient Operation of Wholesale Markets and the Establishment of Just and Reasonable Wholesale Rates

Demand response provides consumers with the ability and the incentive to reduce their consumption of electricity in response to high wholesale prices. But these benefits can be fully realized only if demand response is integrated into wholesale markets, which can only be accomplished under FERC's jurisdiction.

Several features of the electricity market make the reliable provision of clean, low-cost electricity at just and reasonable rates especially challenging at times of peak demand. Electricity cannot be economically stored in appreciable quantities, so available supply (generation) and demand (load) must balance in real time. *See* Office of Enforcement, FERC, *Energy Primer: A Handbook of Energy Market Basics* 38 (July 2012) ("*Energy Primer*"), http://www.ferc.gov/market-oversight/guide/energy-primer.pdf. When demand is highest, the highest cost generation resources are called into production, leading to sharp increases in wholesale prices. In addition, if generation or transmission capacity falls short of high demand levels, the grid operator is required to take a series of steps to limit the negative consequences, starting with voltage reductions or "brownouts" and ending, in more severe cases, with load shedding or "rotating blackouts" to restore balance. If these measures to reduce load to meet available supply are

not successful, uncontrolled widespread blackouts may result.

Matching supply and demand in real time is made more difficult because consumers' demand for electricity generally does not respond to wholesale prices. In ordinary markets, consumers buy a product if the value they receive from using it exceeds its price but not otherwise. When price reflects the marginal cost of production – as it does in well-functioning wholesale electricity markets – this ensures an efficient use of resources, because consumption always creates more value than the cost of the inputs to production. But retail electric rates typically do not adjust in real time to reflect changes in wholesale prices. Retail customers may continue to consume electricity even when the marginal cost of electricity production exceeds not only the retail price but also the benefits of consumption. This leads to higher than optimal consumption and higher than optimal wholesale prices.

Well-designed demand response programs can address this problem and approximate the efficient functioning of normal markets by supplying the price signals that are otherwise missing. Demand response payments provide an incentive for consumers to choose to forgo consumption when those payments, combined with any savings from forgone retail consumption, exceed the benefit of consuming the electricity.[2]

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[2] As an example, suppose the locational marginal price ("LMP") – that is, the marginal cost of generating electricity at wholesale – rises to $90 per megawatt-hour (MWh), while a customer's fixed retail generation rate is $50/MWh. The customer in that case does not receive price signals reflecting the actual costs of producing electricity. If, however, the customer is offered an additional $40 to curtail consumption, then the total

Moreover, when demand adequately responds to price signals reflecting the actual marginal cost of generating electricity, peak wholesale prices are lower and costly spikes in wholesale pricing can be mitigated. Demand response can thus provide significant increases in economic efficiency and other benefits to the wholesale market. Those benefits flow through to other retail customers in terms of both lower prices and increased reliability – benefits that are in addition to the savings reaped by individual customers who participate in demand response programs. *See* FERC App. 79a-80a, ¶ 33.

Over the long term, the savings achieved from avoiding investments in generation resources that would otherwise be needed to meet occasional periods of peak demand free up capital for investment in other, more valuable products and services, including innovative technologies on both the wholesale and retail sides of the electricity market. *See* The Brattle Group, *The Power of Five Percent* 5-6 (May 16, 2007) (estimating that a 5% overall peak load reduction through demand response produces $5-10 billion per year in short-term benefits and another $3 billion per year in long-run benefits), http://www.brattle.com/system/publications/pdfs/000/004/740/original/The_Power_of_Five_Percent_May_2007.pdf?1378772126; Int'l Energy Agency, *Empowering Consumer Choice in Electricity Markets* 16 (Oct. 2011) ("*IEA Report*") (explaining that, in the European electricity grid, without demand response, the *ten* peak load hours in a year would require approximately *seven gigawatts* of installed capacity, representing 1.7% of total capacity),

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financial incentives offered to the customer (a total of $90 in savings and incentive payments) mirror the costs of generating that power at wholesale.

http://www.iea.org/publications/freepublications/publication/empower.pdf.

Demand response also provides additional advantages that benefit society at large. It can reduce pollution by eliminating the need to use the least efficient, and generally most polluting, peaking units. *See* FERC App. 79a-80a, ¶ 33. It can also improve the reliability of the entire electric system by providing a mechanism to reduce usage appreciably and balance the grid on short notice. *See* U.S. Dep't of Energy, *Benefits of Demand Response in Electricity Markets and Recommendations for Achieving Them* 28 (Feb. 2006) ("*DOE Report*"), http://energy.gov/sites/prod/files/oeprod/DocumentsandMedia/DOE_Benefits_of_Demand_Response_in_Electricity_Markets_and_Recommendations_for_Achieving_Them_Report_to_Congress.pdf. Distributed resources, including demand response resources, can be quickly deployed, allowing grid operators to address overloads on the bulk power system that could lead to uncontrolled blackouts. *See id.* at 8. Many of the transmission constraints, if solved by installing new central-station generating facilities or new transmission lines, could take years to address.

To maximize these benefits, demand response resources must be integrated into the wholesale market: participation in the wholesale market increases competition with traditional generators, lowers wholesale prices, and helps balance wholesale supply and demand. *See* FERC App. 59a-61a, ¶ 10. For several years, providers of demand response resources have been permitted to bid those resources into next-day and real-time wholesale energy markets operated by independent system operators ("ISOs") and regional transmission organizations ("RTOs"). Under FERC Order 719, issued in 2008,

"dispatchable" demand resources – that is, those that can be verifiably called upon to curtail consumption from a measurable baseline, *see Energy Primer* 47 – can be bid directly into the wholesale market. Bids may be placed by the end-user itself if the end-user's electricity loads are significant enough – for example, a steel mill – or by an aggregator that can place a bid on behalf of a collection of smaller users, such as large retail establishments or office buildings. *See generally* Order 719, *Wholesale Competition in Regions with Organized Electric Markets*, 125 FERC ¶ 61,071 (2008), *aff'd as modified on denial of reh'g*, Order 719-A, 128 FERC ¶ 61,059 (2009).

### B. The D.C. Circuit's Holding Improperly Restricts FERC's Jurisdiction over Practices and Regulations That Affect the Wholesale Market

Contrary to the D.C. Circuit's decision, authority to regulate sales of demand response resources in the wholesale market falls squarely within the agency's jurisdiction to establish "rules and regulations affecting or pertaining" to wholesale sales. 16 U.S.C. § 824d(a). Furthermore, because FERC reasonably determined that sales of demand response are not "sale[s] of electric energy" that are outside of FERC's regulatory authority under § 201(b) of the FPA, *id.* § 824(b)(1), nothing in the FPA restricts FERC's jurisdiction over the participation of demand response resources in wholesale markets.

#### 1. FERC Has Jurisdiction over the Participation of Demand Response Resources in the Wholesale Market

Section 201(b) of the FPA gives FERC jurisdiction over "the sale of electric energy at wholesale," while denying FERC jurisdiction over "any other sale of

electric energy." 16 U.S.C. § 824(b)(1). Sections 205 and 206 further extend FERC jurisdiction to "rates and charges made for or in connection with the transmission or sale of electric energy subject to the jurisdiction of [FERC]," including "regulation[s] [or] practice[s] affecting such rate[s]." *Id.* §§ 824d(a), 824e(a); *see also New York v. FERC*, 535 U.S. 1, 16-17 (2002). This "affecting" jurisdiction permits FERC to regulate those practices that directly affect wholesale rates. *See California Indep. Sys. Operator v. FERC*, 372 F.3d 395, 403 (D.C. Cir. 2004) ("[S]ection 206's empowering of the Commission to assess the justness and reasonableness of practices affecting rates of electric utilities is limited to those methods or ways of doing things on the part of the utility that directly affect the rate or are closely related to the rate, not all those remote things beyond the rate structure that might in some sense indirectly or ultimately do so.").

Demand response and distributed energy resources affect wholesale rates directly. Wholesale electricity markets employ elaborate mechanisms to determine the exact point where the supply and demand curves cross. Small changes in supply or demand can cause large swings in wholesale price. *See IEA Report* 15-16. As FERC noted, the wholesale market participation of demand response resources is largely identical to the participation of traditional generation. Like traditional generation, demand response resources can participate in capacity and ancillary markets, *see* FERC App. 99a, ¶ 59 n.126, and can be used to balance generation and load, *see id.* at 70a-71a, ¶ 21. These roles are central to the efficient operation of the wholesale market. *See id.* at 95a-98a, ¶¶ 55-57. Wholesale market participation of demand response resources can reduce wholesale energy costs by

hundreds of millions of dollars over the course of a year because wholesale demand response resources can effectively – and substantially – moderate peak pricing in wholesale markets. *See IEA Report* 16; *see also DOE Report* 37 (observing that, "even in regional markets," demand response can produce a cumulative wholesale price reduction "in the billions of dollars").

Rules governing the terms under which demand response and distributed energy resources are authorized to compete with generation resources in wholesale markets thus "affect[]" wholesale rates and charges quite directly. 16 U.S.C. § 824e(a). When FERC concluded that Order 745 was within its jurisdiction, *see* FERC App. 137a, ¶ 112 ("[D]emand response in organized wholesale energy markets directly affects wholesale rates."), it was acting within its authority. And, even if that conclusion were subject to debate, it should be beyond dispute that FERC's conclusion to that effect was reasonable and therefore lawful. *See City of Arlington v. FCC*, 133 S. Ct. 1863, 1868, 1874-75 (2013); *Chevron U.S.A. Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842-44 (1984).

**2. Incidental Effects on Retail Markets Do Not Eliminate FERC's Jurisdiction**

While granting FERC jurisdiction over sales of electricity at wholesale, § 201(b) also reserves to States jurisdiction over "any other *sale* of electric energy." 16 U.S.C. § 824(b)(1) (emphasis added). The D.C. Circuit, however, improperly equated retail *sales* with the retail *market*. *See* FERC App. 11a ("Demand response – simply put – is part of the retail market. It involves *retail* customers, their decision whether to purchase *at retail*, and the levels of *retail* electricity consumption."). But § 201(b)'s

restriction on FERC jurisdiction is more focused than the D.C. Circuit majority's interpretation.

The retail *market* includes the universe of energy alternatives and choices available to customers seeking to control their own energy consumption and production decisions. The vast majority of those options are not final sales of electricity from the grid to the consumer of that electricity of the type committed exclusively to state jurisdiction. Examples include customer-owned solar panels or back-up generators, combined heat and power facilities, smart thermostats, and other devices used to manage energy in the customer's home or facility more efficiently. All of these options available to customers interact with and may affect their consumption of retail electricity, but the FPA does not assign them exclusively to state jurisdiction, because none is a retail "sale of electric energy." Notably, while the FPA denies FERC jurisdiction over "any sale of electric energy" other than wholesale sales, it does *not* broadly reserve to States exclusive jurisdiction over any practices that might affect the retail *market*.[3] On the contrary, the FPA explicitly grants *FERC* jurisdiction over rules and regulations affecting wholesale rates and charges, irrespective of the indirect impact on retail markets. *See* 16 U.S.C. § 824e(a).

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[3] *Oneok, Inc. v. Learjet, Inc.*, 135 S. Ct. 1591 (2015), does not shed light on the question presented here. This Court there held that a state antitrust suit was not preempted by the Natural Gas Act – a close analog to the FPA – because the suit was aimed at practices affecting *retail* rates. *Id.* at 1599-600. The Court did not suggest that FERC lacked authority to regulate the same practices to the extent they affect *wholesale* prices. And regulation of demand response participation in wholesale markets does not regulate retail electricity rates.

Although Order 745 involves compensation that may be paid to retail customers who have entered the wholesale market, FERC determined that customers' decisions *not* to purchase electricity are not "other sale[s] of electric energy" that are carved out from FERC jurisdiction.[4] That determination was reasonable, particularly when considering the complex and interdependent interactions that take place in electricity markets. When a customer elects to install a micro-turbine in the basement or solar panels on the roof, or simply to reduce consumption during peak periods, it eliminates the need to purchase that amount of energy from its retail provider. As FERC recognized in Order 745-A, at a minimum, it is ambiguous whether forbearing from purchasing electricity at retail involves a retail *sale* of electric energy jurisdictionally reserved to States. FERC App. 199a, ¶ 32. Faced with that ambiguity, FERC reasonably concluded that load reduction is not a retail sale and that § 201(b)(1) therefore does not speak to FERC's authority to regulate demand response participation in the wholesale market. As Judge Edwards explained:

> The statute, to my mind, is ambiguous regarding whether forgone consumption constitutes a "sale" under section 201(b)(1). Because of this ambiguity, the Act is also ambiguous as to whether a rule requiring administrators of wholesale markets to pay a specified level of

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[4] If a demand response customer's decision to forgo consumption is a "sale of electric energy" at all, it is properly characterized as a sale "at wholesale" – that is, the forgone consumption is akin to a commodities contract wherein the purchaser may opt to resell the contract prior to delivery, thereby liquidating its position at the prevailing market price. *See* 16 U.S.C. § 824(b)(1) (granting FERC jurisdiction over "the sale of electric energy at wholesale").

> compensation for such forgone consumption constitutes "direct regulation" of retail sales that would contravene the limitations of section 201.

*Id.* at 20a-21a. The D.C. Circuit majority erred by allowing its reading of the ambiguous restriction on FERC's authority contained in § 201(b) to trump the clear grant of jurisdiction in § 205 and § 206. *Cf. New York v. FERC*, 535 U.S. at 22 (explaining that a general policy statement "'cannot nullify a clear and specific grant of jurisdiction'") (quoting *FPC v. Southern California Edison Co.*, 376 U.S. 205, 215 (1964)).

Moreover, FERC reasonably concluded that, under the FPA's jurisdictional provisions, it could provide an incentive for retail customers to participate in wholesale market demand response programs, even though there would be effects in the retail market. All regulations in the wholesale market impact the retail market, because changes in the price or quantity of wholesale electricity eventually affect the price that retail energy customers pay.[5] As with any wholesale market regulation, the effects on the retail market in this case are indirect; FERC did not attempt to regulate retail sales or retail rates. And retail sales can still proceed on the same terms under Order 745 as they could before the order was issued, because FERC has reserved authority for state regulations. *See* 18 C.F.R. § 35.28(g)(1)(i)(A). The D.C. Circuit erred by failing to defer to FERC's reasonable

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[5] Even when electric utilities cannot change their pricing in real time due to technological or state regulatory constraints, they typically recover these costs through higher fixed rates or prices, or through a variety of adjustment clauses in regulated retail rates.

judgment. *See City of Arlington*, 133 S. Ct. at 1868, 1874-75.

### 3. Denying FERC Jurisdiction over Wholesale Demand Response Creates Substantial Regulatory Gaps

#### a. The D.C. Circuit's decision creates regulatory inconsistencies that threaten development and use of innovative technologies

The United States is experiencing a wave of innovation in electric technologies, many of which are deployed by retail customers but nevertheless can contribute directly to the efficient operation of wholesale markets. This innovation is threatened by the regulatory gaps created by the D.C. Circuit's ruling.

Technologies are currently being deployed to enable customers to participate in wholesale markets through demand response and other programs. And, although the court below treated a reduction of electricity purchases as a retail sale of electric energy, many of the same devices that deliver reductions of consumption can also operate in reverse to increase consumption, and the movement in either or both directions can provide ancillary services to the wholesale market.[6] Some devices reduce consumption of

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[6] Ancillary services include operating reserves, which are resources that can be brought online quickly to increase supply or reduce demand to balance the grid and prevent outages, and "regulation" or "frequency" response, which involves modulating power generation or consumption to maintain the proper frequency in the grid. *See Energy Primer* 59. Ancillary services fall within FERC's § 201(b) jurisdiction over the transmission of electricity in interstate commerce. 16 U.S.C. § 824(b)(1); *see also New York v. FERC*, 535 U.S. at 17 ("[t]here is no language in the statute limiting FERC's *transmission* jurisdiction to the wholesale market").

power purchased at retail by producing power on the customer's premises, and, with even greater levels of production, can produce energy for resale in wholesale markets. For example, a number of NRG's current offerings are capable of supplying both demand response and ancillary services, as well as electric energy for resale. Smart thermostats allow the owner to adjust temperatures automatically or remotely, reducing and increasing power drawn from the grid on command. This can reduce retail consumption simply to save money, or many such thermostats can be aggregated to provide demand response when wholesale prices are high or to provide ancillary services and capacity to the wholesale market. Battery-powered electric vehicles can use charging systems that intelligently reduce electricity consumption in hours when wholesale prices are high and shift it to hours when wholesale prices are lowest, while also varying the rate of charging to provide ancillary services from vehicles to the wholesale market. Innovative combined heat and power devices can heat buildings while also producing supplemental electricity that is cheaper or cleaner than the local utility's grid-sourced power, which they can use either to reduce retail purchases or to sell into wholesale markets.

As these examples show, reductions in consumption are electrically equivalent to increases in production. Both are used to produce demand response resources used by wholesale markets. Further, many distributed energy technologies work by increasing and decreasing consumption, or production, or a combination of both, and can in this way produce ancillary services used by wholesale markets. Considering reductions in consumption to be retail sales, as the court below did, is inconsistent with the

way electricity works. There is nothing inherently "retail" or "wholesale" about electricity; similarly, there is nothing inherently retail or wholesale about demand response. The demand response programs and transactions that fall within FERC's jurisdiction are critical to efficient functioning of *wholesale* markets for electric energy and the promotion of just and reasonable rates therein; the D.C. Circuit's insistence that demand response is inherently a retail product is inconsistent with and cannot change this fact.

Under the D.C. Circuit's ruling, these services would be regulated under different and potentially conflicting jurisdictional regimes. Demand response and other services that are based on reductions in consumption from the grid would presumably be subject to exclusive state regulation, with all the attendant distortions and barriers to competition. *See infra* Part I.B.3.b. Sales of excess generation would remain within FERC's § 201(b) jurisdiction as sales of electricity for resale. *See* 16 U.S.C. § 824(b)(1). And, although it has been considered settled that ancillary grid services also fall within FERC's jurisdiction under §§ 201(b)(1), 205, and 206, *see id.* §§ 824(b), 824d, 824e; *see also New York v. FERC*, 535 U.S. at 16-17, FERC's authority over certain ancillary services that are based on reductions in retail consumption may be thrown into confusion.

These issues of overlapping jurisdiction become even more complex when considered in the context of microgrids. Microgrids are complex integrated networks of generation and consumption devices that can operate independent of the grid or in connection with it. *See* U.S. Dep't of Energy, *How Microgrids Work* (June 17, 2014), http://energy.gov/articles/how-microgrids-work. Depending on market conditions

and other considerations, microgrid customers can precisely tailor their self-generation and outside consumption decisions to support their energy needs while minimizing cost. This functionality allows microgrids to provide an array of services, including demand response, to wholesale markets. In particular, microgrids can supply generating capacity and ancillary services, such as frequency regulation. Under the lower court's ruling, however, these generation services to the wholesale market would be subject to FERC jurisdiction, while the actual curtailment of consumption that allows microgrids to perform those services would be subject to state jurisdiction.

The D.C. Circuit's jurisdictional ruling would likely force regulatory agencies and courts across the country to draw an artificial line between "pure" reduction in retail consumption, which the States would regulate, and power production and ancillary services, which would remain within FERC's jurisdiction. Yet this distinction would not be based on physical operation of the system, the operation of the energy markets, or even the nature of parties' commercial transactions. Innovative technologies continually cross such artificial lines in both directions: a controlled reduction in overall demand (that is, demand response) is functionally equivalent to a controlled increase in overall electricity production, which is squarely within FERC's jurisdiction.

The decision below thus threatens to have profound and adverse real-world effects. Innovative technologies can provide the optimal mix of customer and wholesale market value only if they are subject to a coherent national regulatory regime regarding their participation in the wholesale market. And this is

what Congress provided for in the FPA, when it gave the Federal Power Commission (later FERC) jurisdiction over wholesale sales of electric energy and all practices affecting or pertaining to the rates for those sales. If a solar panel, battery bank, or combined heat and power system must switch not only between production and consumption modes but also between regulatory regimes many times each day, their commercial value to developers and adopters of those technologies will be severely constrained, as will their ability to contribute to FERC's goals of ensuring just and reasonable wholesale rates. And an ill-defined division between state and federal authority will deter investment. *See Morgan Stanley Capital Grp. Inc. v. Public Util. Dist. No. 1 of Snohomish Cnty.*, 554 U.S. 527, 551 (2008) (recognizing that regulatory uncertainties "'can have a chilling effect on investments and a seller's willingness to enter into long-term contracts and this, in turn, can harm customers in the long run'") (quoting Final Rule, *Market-Based Rates for Wholesale Sales of Electric Energy, Capacity and Ancillary Services by Public Utilities*, 72 Fed. Reg. 39,904, 39,906 (July 20, 2007)).

**b. The D.C. Circuit's decision will lead to many economic and operational inefficiencies**

The challenges of integrating demand response and other distributed energy resources into wholesale electricity market operation are national in scope. These issues therefore fall squarely within the area that Congress authorized FERC to regulate. Indeed, without a coherent national regulatory framework, States will be left to attempt to solve these national problems on a patchwork basis. They are unlikely to be able to do so.

To be sure, demand response programs can be and are offered at the retail level by state-regulated utilities without being dispatched into the wholesale market. Those retail-level programs can continue. But several factors limit their efficacy. *First*, distribution utility programs are typically not integrated with the wholesale market clearing process where demand response can efficiently compete with generation – and likely could not be under the D.C. Circuit's decision.[7] *Second*, regulated utilities' demand response programs are typically focused on reducing the distribution utility's costs, not on improving the efficiency and reliability of the wholesale power system. A utility could, for instance, rely on demand response to avoid certain investments in new local distribution systems, but fail to provide the level of demand response that would ensure efficient levels of wholesale energy production.

*Third*, distribution utility demand response programs are often closed to competitive demand response providers and, instead, limited to programs provided by the distribution utility itself. This limits competitive participation and may exclude an entire universe of competitive smart energy services that are available for demand response and related

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[7] If the decision below were allowed to stand, not only would FERC be disabled from regulating the level of compensation for wholesale demand response, but the States would likely be barred from doing so as well. *Cf. PPL EnergyPlus, LLC v. Nazarian*, 753 F.3d 467 (4th Cir. 2014) (state laws designed to promote generation facilities by governing rate for sales into wholesale capacity markets preempted), *petitions for cert. pending*, No. 14-614 (filed Nov. 25, 2014) & No. 14-623 (filed Nov. 26, 2014); *PPL EnergyPlus, LLC v. Solomon*, 766 F.3d 241 (3d Cir. 2014) (same), *petitions for cert. pending*, No. 14-634 (filed Nov. 26, 2014) & No. 14-694 (filed Dec. 10, 2014).

purposes today and that are evolving rapidly. The resulting barriers to entry create buyer's side market power in the demand response market, which suppresses innovation and limits the benefits consumers enjoy from demand response.

*Fourth*, there are literally hundreds of regulated retail utilities across the United States, each with its own tariffs and rules and operating under a maze of state, municipal, co-operative, and other regulatory authorities. The patchwork of demand response programs and rules that would result from this splintered regulatory authority would prevent development of demand response resources with the appropriate scale to become a meaningful part of the electricity market. When demand response resources have open and nondiscriminatory access to the wholesale market, demand response can deliver significant benefits to the nation's electricity system. Without such wholesale market participation, demand response will be a niche product, customized within each small service area, rather than a competitive resource.

## II. FERC'S DECISION TO SET THE PRICE FOR DEMAND RESPONSE RESOURCES AT LMP SUBJECT TO A "NET BENEFITS" TEST WAS UNLAWFUL

Although FERC properly found that demand response is an integral part of setting just and reasonable energy rates, it acted arbitrarily and capriciously in setting the compensation level for wholesale demand response. The FPA requires FERC to set rates that are just and reasonable and prohibits rates that are "unduly discriminatory" or "preferential." 16 U.S.C. § 824e(a). The practical effect of Order 745, however, is to establish a preference in favor of demand response as compared to

other suppliers and to discriminate in favor of behind-the-meter generation as compared to in-front-of-the-meter generation. By failing adequately to consider or to explain the justification for those effects, FERC departed irrationally and without explanation from its past precedents calling for just, reasonable, and nondiscriminatory wholesale market rates, and instead implemented an arbitrary and unduly discriminatory pricing mechanism.

### A. Order 745 Incentivizes Demand Response Resources More Than Conventional Generation Resources, Causing an Uneconomic Mix of Resources

By setting compensation for demand response resources at full LMP subject to a "net benefits" test, Order 745 provides greater incentives for *curtailment* of electricity consumption than for comparable physical *generation*, which leads to discriminatory and inefficient results both in the electricity market and in other upstream and downstream markets.

As explained above, to support an efficient choice between relying on a generation resource or a demand response resource, rates for demand response should encourage a customer to continue to consume power if the value of doing so is greater than the marginal cost of producing energy at that location on the transmission system – that is, the LMP. By the same token, if the benefit derived from consumption is less than the LMP, the customer should find it more profitable to accept the demand response payment and stop consuming electricity.

When a customer stops consuming electricity, of course, the customer avoids paying the retail rate. Therefore, the demand response payment should make up the difference between the LMP and that

rate, so that the benefit to the customer is the value of the full LMP By contrast, paying the customer full LMP on top of the fixed rate savings will lead to curtailment even when the value of consumption is greater than LMP – sometimes by large amounts.

Order 745 establishes this latter regime, inducing demand response even when it would be more cost effective for a customer to continue consuming electricity and pay for additional generation. Economically, this is equivalent to subsidizing demand response resources: it distorts the market by providing higher compensation for non-consumption and inducing greater levels of demand response than would occur in an efficient market. FERC itself has recognized this in the past. *See PJM Indus. Customer Coal. v. PJM Interconnection LLC*, 121 FERC ¶ 61,315, at ¶¶ 3, 26 (2007) (recognizing that payment of full LMP without an appropriate offset reflecting the avoided cost of consumption is a "subsidy" and that subsidy payments are not necessary to produce "just and reasonable" rates); 18 C.F.R. § 35.28(g)(1)(i)(A) ("Every Commission-approved independent system operator or regional transmission organization must accept bids from demand response resources *on a basis comparable to any other resources* ") (emphasis added).[8]

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[8] In arguing that LMP is an appropriate price for demand response, FERC uses an example in which LMP is $100 and the costs to a factory of providing demand response are $120. FERC notes that the factory will curtail electricity consumption if paid LMP but not if paid LMP minus the retail rate. *See* FERC Br. 55-56. Yet this example illustrates why the demand response provider's avoided costs should be taken into account. LMP "represents the marginal value of a decrease in demand." FERC App. 104a, ¶ 67. At that price, the factory's marginal

Setting the rate for demand response at LMP imposes real costs on purchasers of wholesale power, who are required to make up the cost of wholesale demand response in the rates they pay. FERC itself recognized that its pricing structure could induce provision of demand response that would make wholesale power *more* expensive for wholesale customers during certain periods. *See* FERC App. 94a, ¶ 52. For that reason, FERC adopted a "net benefits" test, which seeks to ensure that demand response resources are permitted to sell into the wholesale market in exchange for full LMP only when doing so provides "net benefits" – that is, contributes to lower wholesale prices – for the system as a whole. *See id.* at 94a-95a, ¶¶ 52-54. But the fact that FERC needed to rely on a work-around to mitigate the distortions created by payment of the full LMP confirms that it is not sending appropriate pricing signals. If the price for demand response resources took account of consumers' avoided costs, demand response providers would have no incentive to participate in wholesale markets except when forgoing consumption would promote just and reasonable rates for all purchasers of wholesale power.

### B. Order 745 Discriminates Between Behind-the-Meter and In-Front-of-the-Meter Generators

FERC further erred in failing to acknowledge or to justify the discriminatory effects of Order 745 as applied to identical behind-the-meter and in-front-of-the-meter generators. The FPA's prohibition on undue discrimination means that wholesale markets must provide the same level of compensation for

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costs of curtailment exceed its marginal value, and the factory should not curtail its electricity usage.

provision of the same electrical services. The pricing policy advanced in Order 745, by contrast, provides markedly different levels of compensation for providing equivalent amounts of demand response and generation.

Consider an example in which a customer uses 10 megawatt-hours (MWh) of electricity and owns a generator that produces 6 MWh and costs $50/MWh to run.[9] Suppose that the net-benefits test is satisfied and that the LMP is $50/MWh. If the customer's generator were in front of the meter – that is, on the grid – the customer would pay a net of $500 for its electricity (paying $500 to purchase 10 MWh from the grid and $300 to operate the generator, and receiving $300 in wholesale market revenues from selling the 6 MWh produced by the generator). But, if the customer installs the generator behind the meter, it will incur "a net payment of $200 rather than a net payment of $500" for the same electricity (paying $200 to purchase 4 MWh from the grid and $300 to operate the generator, and receiving $300 for its demand response contribution of 6 MWh paid at LMP).[10] Other wholesale customers have to make up the difference. The physical effect on the transmission and distribution system is largely identical whether the hypothetical customer operates the on-site generator behind the meter or in front of the meter. But, under FERC's rule, the compensation for these identical resources differs markedly.

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[9] This example and analysis is derived from William W. Hogan, *Demand Response Pricing in Organized Wholesale Markets* 5-6 (May 13, 2010), http://www.hks.harvard.edu/fs/whogan/Hogan_IRC_DR_051310.pdf.

[10] *Id.* at 6.

Moreover, Order 745 prefers behind-the-meter resources over *more efficient* RTO-side generators. *See* William W. Hogan, *Implications for Consumers of the NOPR's Proposal to Pay the LMP for All Demand Response* 7-8 (May 12, 2010), http://www.hks.harvard.edu/fs/whogan/Hogan_EPSA_NOPR_051210.pdf. Consider the same facts as above, but now assume that LMP has dropped to $40/MWh. This means the customer's generator, which costs $50/MWh to run, is less efficient than the least-efficient grid-based generation resources that have cleared the market. Accordingly, if the generator is installed in front of the meter, the customer will not run it, because it would be operating at a loss. The customer's total electricity costs would be $400, from its purchase of 10 MWh from the grid. But, if the generator is behind the meter, then (assuming the net-benefits test is met) the customer's total electricity costs would fall to $220 – the generator would pay $160 to purchase 4 MWh from the grid, pay $300 to operate its generator, and receive $240 (again, paid for by other consumers of wholesale power) for its 6 MWh of demand response. In this scenario, there is no justification for calling the more costly behind-the-meter generation resources into production. As FERC itself appears to acknowledge,[11] when

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[11] *See* FERC Br. 26-27 ("Suppose that a wholesale-market operator was vastly *over*paying for demand-response commitments, choosing to utilize them when it would be far more efficient to pay for additional power generation instead. That overcompensation would inevitably result in higher-than-optimal wholesale rates; the operator would be paying for commitments it does not need to balance supply and demand, and then charging wholesale purchasers to fund those payments. Given that the FPA *requires* FERC to ensure that wholesale rates are just

a rate causes overuse of demand response resources, it is not just and reasonable.

There is no apparent justification for preferring behind-the-meter generation; and even less justification for preferring behind-the-meter generation that is less efficient than available generation resources on the grid. Yet, by paying the full amount of LMP, FERC's order establishes a preference for behind-the-meter generation despite both the economic costs and other externalities of behind-the-meter generation, such as increased air pollution. *See, e.g.*, Xiyue Zhang & K. Max Zhang, *Demand Response, Behind-the-Meter Generation and Air Quality*, 49 Envtl. Sci. & Tech. 1260, 1265-66 (2015) (explaining that shifting generation from peaking units on the grid to behind-the-meter units through demand response may significantly increase air pollution), http://energy.mae.cornell.edu/PDF/Demand%20Response,%20Behind-the-Meter%20Generation%20and%20Air%20Quality.pdf.

### C. FERC Offered No Adequate Justification for the Distortions Created by Its Order

FERC provided no explanation adequate to justify the differential treatment of comparable resources. FERC stated, correctly, that there are barriers to wholesale market participation by demand response resources, such as lack of dynamic retail prices and lack of real-time pricing information. *See* FERC App. 96a-98a, ¶ 57. But it then concluded, with no elaboration, that "paying LMP can address the identified barriers to potential demand response providers." *Id.* at 99a, ¶ 58. The record contains no suggestion that

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and reasonable, 16 U.S.C. 824e(a), it is inconceivable that the Commission would lack authority to act in that situation.").

subsidizing demand response providers either eliminates or compensates for those barriers. Instead, the opposite is true. Inefficient compensation of demand response resources threatens to undermine investment by companies like NRG in this burgeoning distributed energy sector, not promote it.

In Order 719, FERC directly addressed a barrier to demand response participation – the inability to bid in the wholesale market – such that demand response resources could participate in the wholesale electricity market and make it more efficient. Here, in contrast, FERC simply assumed that *more* participation would necessarily improve efficiency, without adequate explanation or consideration of the possibility that payment of full LMP would lead to an inefficient resource mix and impose unwarranted costs on wholesale purchasers. Investments in distributed energy technologies should be directed towards economic efficiency, as well as environmental benefit, but FERC's pricing scheme instead provides an incentive to engage in inefficient arbitrage.

FERC's finding that any compensation level other than LMP (when the net-benefits test is satisfied) would be unjust and unreasonable underscores its error. *See* FERC App. 90a-91a, ¶ 47. That finding shows that FERC interprets the FPA's provisions to require payment of one and only one rate. This is a novel interpretation that finds no basis in the statute's text, legislative history, or prior interpretations by courts or the agency itself. *Cf. PJM Interconnection, LLC*, 99 FERC ¶ 61,227, at 61,941 (2002) (stating that PJM should compensate demand response providers "by paying the difference between the LMP and what the customer would save by not using power" and expressly holding that "the Commission

rejects those comments that find that payment of the full LMP is required"). There is no record basis for the conclusion that payment of full LMP will promote appropriate levels of demand response participation in wholesale markets, let alone that that is the only way to do so.

## CONCLUSION

For the foregoing reasons, this Court should hold that (1) FERC has jurisdiction to regulate participation of demand response resources in wholesale markets but (2) the rate established in Order 745 is unlawful.

Respectfully submitted,

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